

CHAPTER SEVEN

FUEL AND EXHAUST SYSTEMS

The fuel system consists of the fuel tank, the shutoff valve, a single carburetor and an air filter.

The exhaust system consists of an exhaust pipe and muffler assembly.

This chapter includes service procedures for all parts of the fuel system and exhaust system. Air filter service is covered in Chapter Three.

Carburetor specifications are covered in **Table 1**. **Table 1** and **Table 2** are located at the end of this chapter.

CARBURETOR OPERATION

An understanding of the function of each of the carburetor components and their relation to one another is a valuable aid for pinpointing a source of carburetor trouble.

The carburetor's purpose is to supply and atomize fuel and mix it in correct proportions with air that is drawn in through the air intake. At the primary throttle opening (idle), a small amount of fuel is siphoned through the pilot jet by the incoming air. As the throttle is opened further, the air stream begins to siphon fuel through the main jet and needle jet. The tapered needle increases the effective flow capacity of the needle jet as it is lifted, in that it occupies progressively less of the area of the jet.

At full throttle the carburetor venturi is fully open and the needle is lifted far enough to permit the main jet to flow at full capacity.

The choke circuit is a "bystarter" system in which the choke lever opens a valve rather than closing a butterfly in the venturi area as on many carburetors. In the open position, the slow jet discharges a stream

of fuel into the carburetor venturi, to enrich the mixture when the engine is cold.

CARBURETOR SERVICE

Carburetor service (removal and cleaning) should be performed when poor engine performance or hesitation is observed. If, after servicing the carburetors and making the adjustments described in this chapter, the vehicle does not perform correctly and assuming that other factors affecting performance, such as ignition timing and condition, etc., are correct, the vehicle should be checked by a dealer or a qualified performance tuning specialist.

CARBURETOR

Removal/Installation

1. Place the vehicle on level ground and set the parking brake or block the wheels so the vehicle will not roll in either direction.
2. Remove the seat.
3. Remove the fuel tank as described in this chapter.
4. Remove the bolts securing the fuel tank bracket (**Figure 1**) and remove the bracket.
5. Loosen the screw (A, **Figure 2**) on the clamping band securing the carburetor to the insulator on the cylinder head.
6. Loosen the screw (B, **Figure 2**) on the clamping band securing the carburetor to the air filter air box connector. Slide both clamping bands away from the carburetor.

7. Note the routing of the carburetor vent tube through the frame. Carefully pull the tube free from the frame and leave it attached to the carburetor.
8. Partially pull the carburetor from the engine and air filter air box.
9. Slide the rubber boot off the choke valve and move it up on the cable.

NOTE

Prior to removing the choke valve and the side cover, thoroughly clean the area around it so no dirt will fall into the carburetor.

10. Unscrew the nut (**Figure 3**) securing the choke valve to the carburetor body and remove the choke valve.

11. Remove the screws and washers securing the side cover (**Figure 4**) and remove the cover.

12. Move the throttle wheel (A, **Figure 5**) to the open position with your finger and disconnect the throttle cable (B, **Figure 5**) from the throttle wheel.

13. Remove the throttle cable out through the slot (C, **Figure 5**) in the carburetor body and remove the throttle cable.

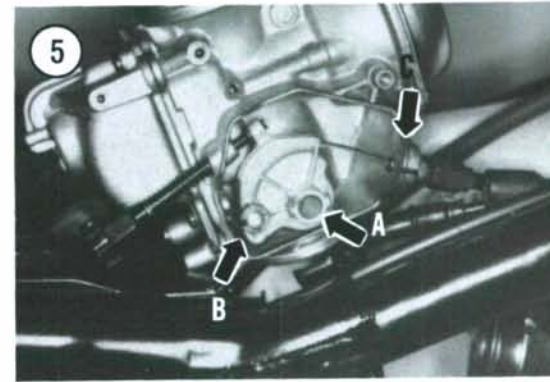
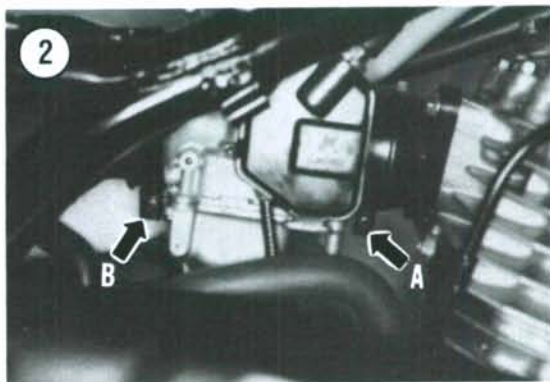
14. Remove the carburetor assembly.

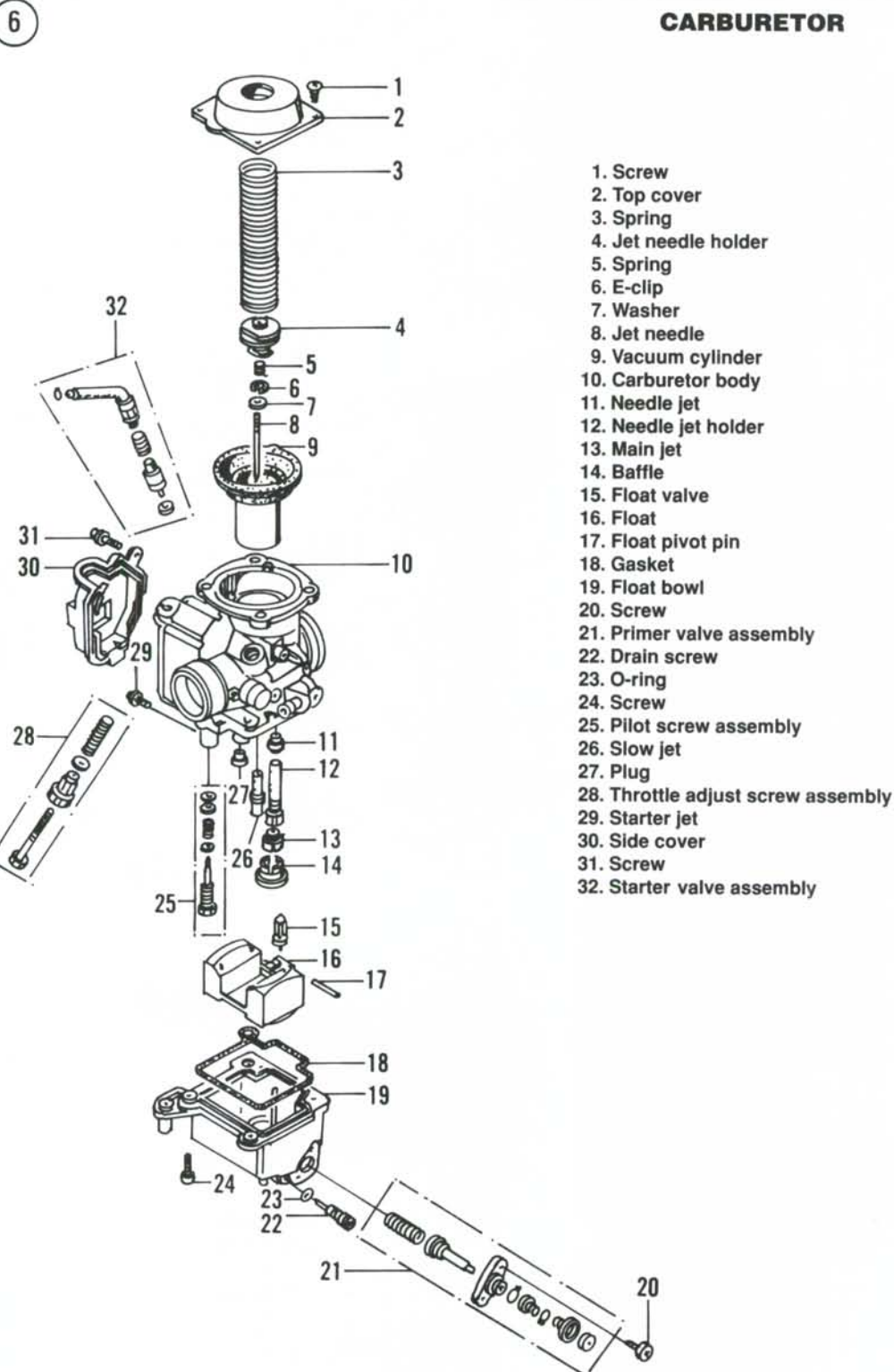
15. Place a clean shop cloth into the carburetor insulator on the cylinder head to prevent the entry of foreign matter.

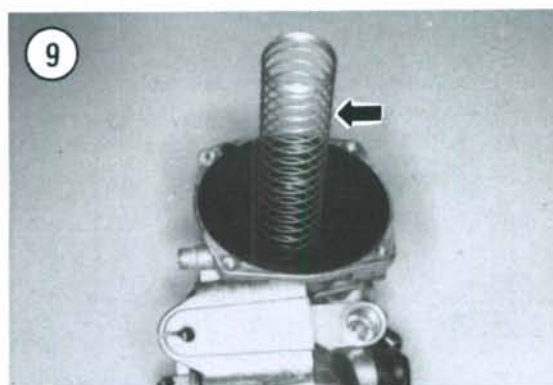
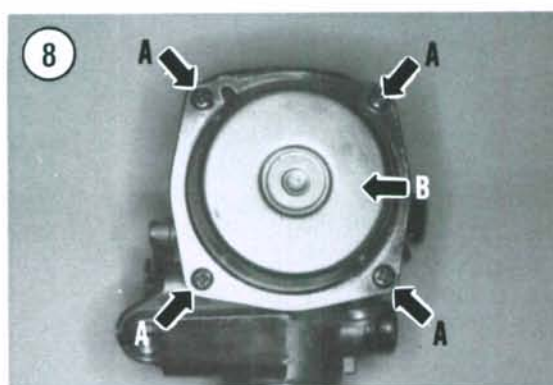
16. Install by reversing these removal steps. Make sure the screws on the clamping bands are tight to avoid a vacuum loss and possible valve damage.

Disassembly/Assembly

Refer to **Figure 6** for this procedure and to **Table 1** for carburetor specifications.

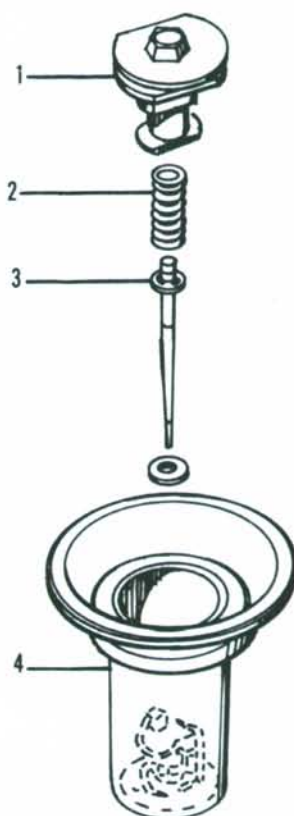


CARBURETOR

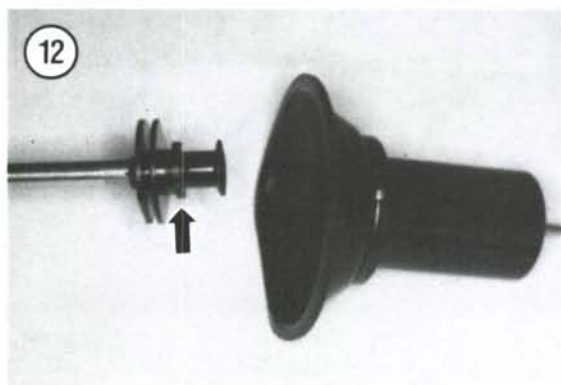


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JET NEEDLE ASSEMBLY



- 1. Holder
- 2. Spring
- 3. Jet needle
- 4. Vacuum cylinder

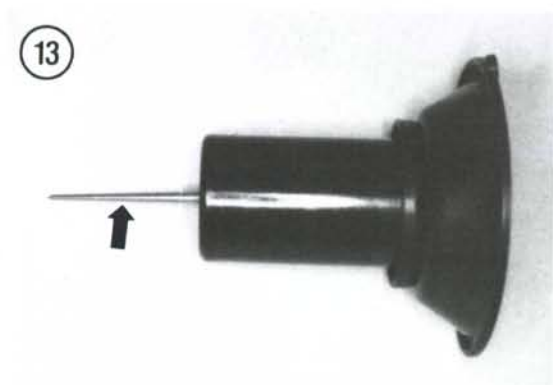


1. Unhook the starter choke valve from the end of the choke cable. Remove the starter valve and spring.
2. Remove the hose (Figure 7) from the carburetor.
3. Remove the screws (A, Figure 8) securing the carburetor top cover to the main body and remove the cover (B, Figure 8).

4. Remove the vacuum cylinder spring (Figure 9).
5. Remove the vacuum cylinder (Figure 10). Carefully work the diaphragm away from the main body and lift the vacuum cylinder out of the carburetor.

6. Remove the jet needle (Figure 11) as follows.

- a. Put an 8 mm socket or Phillips head screwdriver down into the vacuum cylinder cavity and onto the needle jet holder.
- b. Turn the holder 90° counterclockwise to unlock it from the tangs within the vacuum cylinder. Remove the needle jet holder and spring (Figure 12).
- c. Remove the jet needle (Figure 13).



NOTE

If the needle clip is going to be removed, record the clip position prior to removal.



7. Remove the screws securing the primer valve assembly (Figure 14) to the float bowl and remove the assembly and the spring (Figure 15).

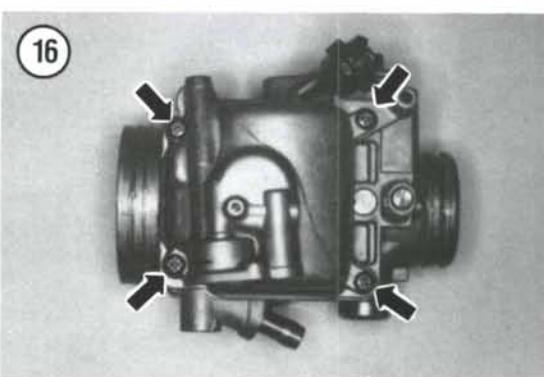
8. Remove the screws securing the float bowl (Figure 16) to the carburetor body and lift the float bowl off.

9. Remove the main jet baffle (Figure 17).

10. Carefully push out the float pin (Figure 18).

11. Lift the float and needle valve (Figure 19) out of the main body.

12. Remove the plug (Figure 20).

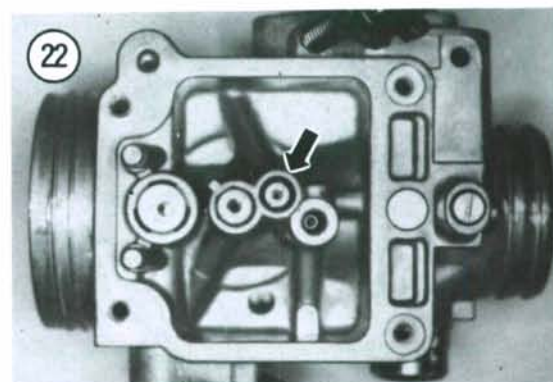
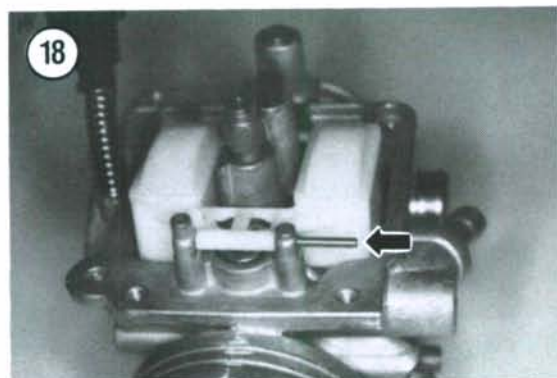
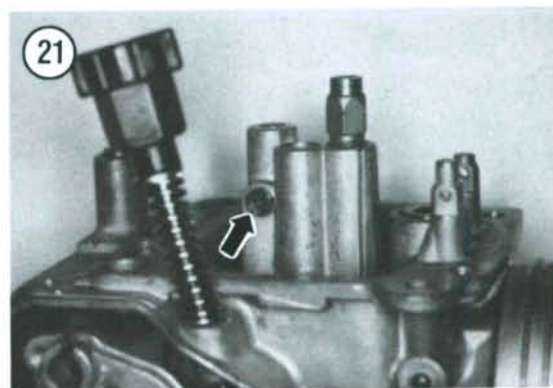


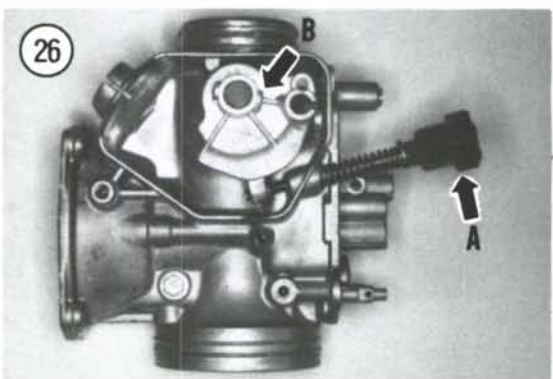
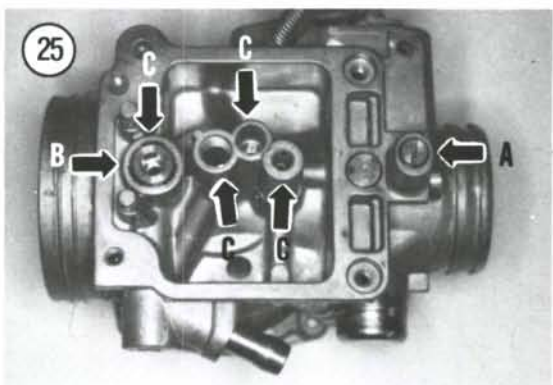
13. Remove the starter jet (**Figure 21**).
14. Remove the slow jet (**Figure 22**).
15. Remove the main jet (**Figure 23**).
16. Remove the main jet holder (**Figure 24**).
17. Turn the carburetor over and gently tap the side of the body. Catch the needle jet as it falls out into your hand. If the needle jet does not fall out, use a plastic or fiber tool and gently push the needle jet out. Do not use any metal tools for this purpose.

NOTE

*Prior to removing the pilot screw, carefully screw it in until it **lightly** seats. Count and record the number of turns so it can be installed in the same position.*

18. Unscrew the pilot screw (A, **Figure 25**) and remove the screw, spring, washer and O-ring seal.
19. Unscrew the throttle adjust screw (A, **Figure 26**) and spring from the carburetor body adjacent to the throttle wheel.
20. Remove the drain screw (**Figure 27**) and O-ring seal from the float bowl.
21. Remove the gasket (**Figure 28**) from the float bowl.



**NOTE**

Further disassembly is neither necessary nor recommended. If throttle shaft or butterfly is damaged, take the carburetor body to a dealer for replacement.

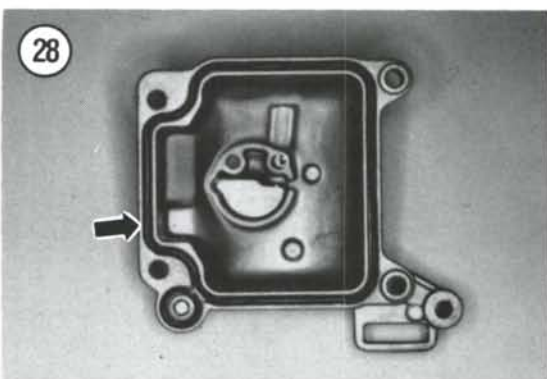
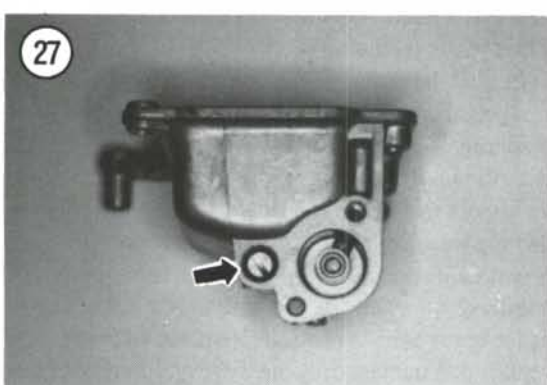
22. Clean and inspect all parts as described in this chapter.

Cleaning and Inspection

1. Clean all parts, except rubber or plastic parts in a good grade of carburetor cleaner. This solution is available at most automotive supply stores in a re-sealable tank with a dip basket. If it is tightly sealed when not in use, the solution will last for several cleanings. Follow the manufacturer's instructions for correct soak time—usually about 1/2 hour.

WARNING

Wear goggles and a respirator when blowing carburetor cleaner off the parts.



2. Remove the parts from the cleaner and wash thoroughly with soap and water. Rinse with clean water and thoroughly dry with compressed air.

CAUTION

*If compressed air is not available, allow the parts to air dry or use a clean lint-free cloth. Do **not** use a paper towel to dry carburetor parts, as small paper particles may plug openings in the carburetor body or jets.*

CAUTION

*Do **not** use a piece of wire to clean them as minor gouges in the jet can alter flow rate and upset the fuel/air mixture.*

3. Make sure the float bowl overflow tube (**Figure 29**) is clear. Blow out with compressed air if necessary.

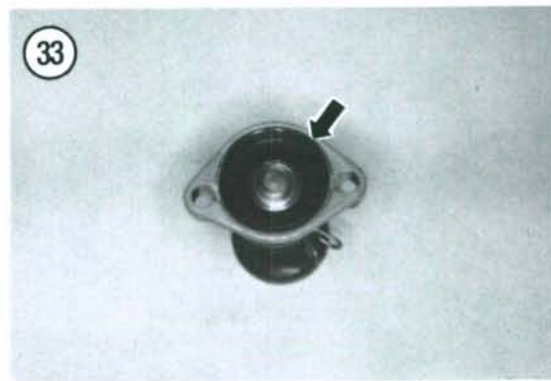
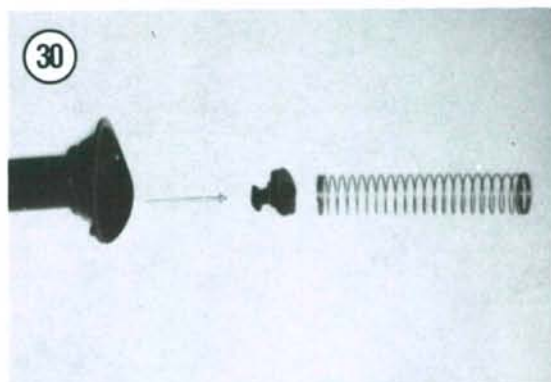
4. Inspect the float bowl O-ring gasket (**Figure 28**) for damage or deterioration; replace if necessary. O-ring gaskets tend to become hardened after prolonged use and heat and therefore lose their ability to seal properly.

5. Inspect the diaphragm, slide and needle (**Figure 30**) for wear, damage or deterioration; replace as necessary. Make sure the small locating ring (**Figure 31**) is in good condition.

6. Inspect the primer valve assembly (**Figure 32**) for wear, damage or deterioration. Make sure the rubber diaphragm (**Figure 33**) is not starting to harden or deteriorate. Replace any defective part.

7. Inspect the end of the float valve needle (**Figure 34**) for wear or damage, replace if necessary.

8. Check the inside of the needle valve body (B, **Figure 25**). If damaged, replace the carburetor body as the valve body is pressed into place and cannot be replaced. A damaged needle valve or a particle of dirt



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or grit in the needle valve assembly will cause the carburetor to flood and overflow fuel.

9. Inspect the needle jet holder and spring (**Figure 35**) for wear, damage or deterioration; replace any defective part.

10. Make sure the holes in the main jet, needle jet and slow jet (**Figure 36**) are clear. Clean out if they are plugged in any way. Replace any jet if you cannot unplug the hole(s).

11. Inspect the float (**Figure 37**) for deterioration or damage. If the float is suspected of leakage, place it in a container of non-caustic solution and push it down. If the float sinks or if bubbles appear (indicating a leak), the float must be replaced.

12. Make sure the butterfly screws (**Figure 38**) are tight. Tighten if necessary.

13. Move the throttle wheel (B, **Figure 26**) back and forth from stop-to-stop and check for free movement. If it doesn't move freely or if it sticks in any position; replace the carburetor body.

14. Make sure all openings in the carburetor body are clear. Clean out if they are plugged in any way. Refer to **Figure 39**, **Figure 40** and C, **Figure 25**.

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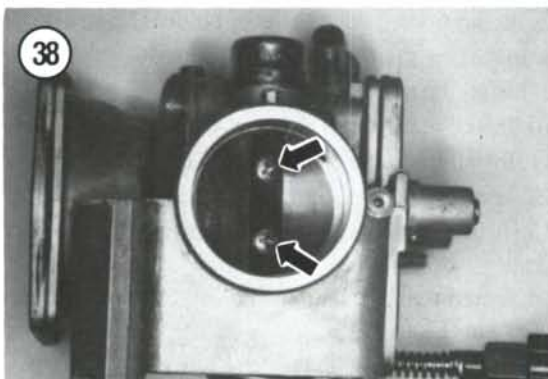
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Assembly

Refer to **Figure 41** for this procedure.

1. If removed, screw the pilot screw assembly (A, **Figure 25**) into the exact same position (same number of turns) as recorded during disassembly.

NOTE

*If a new pilot screw is being installed, turn it out the number of turns indicated in **Table 1** from the **lightly seated position**.*

2. To assemble the vacuum cylinder (**Figure 11**), perform the following.

- a. Insert the jet needle (**Figure 42**) into the vacuum cylinder.
- b. Insert the spring in the end of the needle holder.
- c. Secure the end of the needle jet holder with a 8 mm socket or Phillips head screwdriver (**Figure 12**) and insert the holder into the vacuum cylinder. Turn the needle jet holder 90° *clockwise* to lock the holder in place within the vacuum holder.

3. Install the vacuum cylinder into the carburetor body. Align the tab on the diaphragm with the hole (**Figure 43**) in the carburetor body.

4. Install the vacuum cylinder compression spring (**Figure 9**) into the vacuum cylinder.

5. Insert your index finger into the venturi and hold the vacuum cylinder up to almost the full open position. This will help eliminate pinching the diaphragm when the top cover is installed.

6. Align the hole in the vacuum cylinder (A, **Figure 44**) with the raised boss on the top cover (B, **Figure 44**). Install the top cover and tighten the screws securely.

7. Install the needle jet with the chamfered end facing *up* toward the needle jet holder (**Figure 45**).

8. Install the main jet holder (**Figure 46**).

9. Install the main jet (**Figure 23**).

10. Install the slow jet (**Figure 47**).

11. Install the starter jet (**Figure 21**).

12. Install the plug (**Figure 20**).

13. Install the needle valve (**Figure 19**) onto the float.

14. Install the float and needle valve and install the float pin (**Figure 18**).

15. Install the main jet baffle (**Figure 17**).

16. Inspect the float height and adjust if necessary as described in this chapter.

17. Install the drain screw (**Figure 27**) and O-ring seal into the float bowl. Tighten securely.

18. Install the gasket in the float bowl (**Figure 28**).

19. Install the float bowl and tighten the screws securely (**Figure 16**).

20. Install the primer valve spring (**Figure 15**) and assembly (**Figure 14**) to the float bowl and tighten the screws securely.

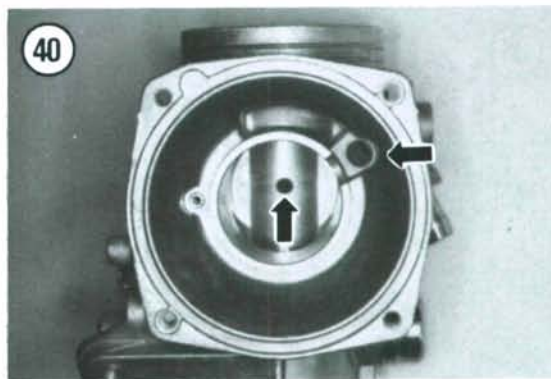
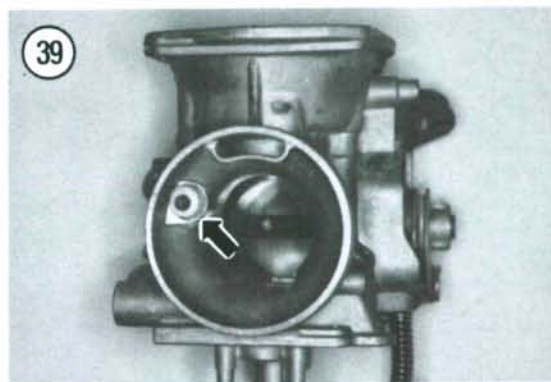
21. Connect the hose onto the carburetor body.

22. Screw the throttle adjust screw (A, **Figure 26**) and spring back into the carburetor body adjacent to the throttle wheel.

23. After assembly and installation are completed, adjust the carburetors as described in this chapter.

CARBURETOR ADJUSTMENTS

Idle Speed and Pilot Screw Adjustment are covered in Chapter Three.



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